

# Program



NATIONAL CENTRE FOR  
**GROUNDWATER**  
RESEARCH AND TRAINING

Australian Groundwater School – Brisbane  
Sustainable Minerals Institute - UQ  
Monday 5 November 2018

TIME		THEME/TOPIC	PRESENTERS
8.30am		<b>Registrations and Coffee</b>	
8.45am		<b>Welcome and Introduction</b>	
9.00am	1	<b>The Importance of Groundwater In Australia</b> <ul style="list-style-type: none"> <li>• What is groundwater</li> <li>• Where is groundwater found?</li> <li>• The hydrologic cycle</li> <li>• What is hydrogeology and its history?</li> <li>• Australian groundwater facts and figures</li> <li>• Australian aquifer map. sedimentary basin/fractured province, inset on map</li> </ul>	
10.00am	2	<b>Introduction to Hydrogeology</b> <ul style="list-style-type: none"> <li>• Factors affecting groundwater</li> <li>• Introduction and examples of aquifer types</li> <li>• Water table and capillary zone</li> <li>• Aquifers &amp; aquitards</li> </ul>	
11.30am		<b>Morning Tea</b>	
11.45am	3	<b>Introduction to Groundwater Hydraulics</b> <ul style="list-style-type: none"> <li>• Groundwater flow systems</li> <li>• Storage in aquifers</li> <li>• Hydraulic Head</li> <li>• Physical &amp; hydraulic parameters</li> </ul>	
12.45pm		<b>Lunch</b>	
1.45pm	4	<b>Drilling Methods and Bore Design</b> <ul style="list-style-type: none"> <li>• Types and purposes of various bores</li> <li>• Drilling methods</li> <li>• Databases in Australia</li> <li>• Methods, variability &amp; limitations of data collection</li> </ul>	
3.00pm		<b>Afternoon Tea</b>	
3.15pm	5	<b>Groundwater Hydraulics</b> <ul style="list-style-type: none"> <li>• Groundwater flow equations</li> <li>• Borehole pumping test</li> <li>• Single borehole test</li> <li>• Lab measurements of hydraulic conductivity</li> </ul>	
5.15pm		<b>End Day 1</b>	
5:30pm		<b>Networking Drinks</b>	

Australian Groundwater School – Brisbane  
 Tuesday 6 November 2018

TIME		THEME/TOPIC	PRESENTERS
9.00am	6	<b>Groundwater Modelling</b> <ul style="list-style-type: none"> <li>• What is a model and what is its purpose?</li> <li>• Modelling groundwater flow</li> <li>• Modelling process</li> <li>• Groundwater modeling codes</li> </ul> <b>Groundwater Modelling Application</b> <ul style="list-style-type: none"> <li>• Modelling guidelines</li> <li>• Limitations and pitfalls in modelling</li> <li>• Modelling case study</li> <li>• Management, regulatory issues</li> </ul>	
11.00am		<b>Morning Tea</b>	
11.15am	7	<b>Tutorial, Part 1</b> <ul style="list-style-type: none"> <li>• Interpreting hydrographs</li> <li>• Developing groundwater contours</li> <li>• Borehole test for hydraulic conductivity</li> <li>• Contaminant transport</li> </ul>	
1pm		<b>Lunch</b>	
2pm	7	<b>Tutorial, Part 2</b> <ul style="list-style-type: none"> <li>• Water budgeting</li> <li>• Estimating groundwater flow</li> <li>• Hydrostratigraphic conceptualisation</li> </ul>	
3.15pm		<b>Afternoon Tea</b>	
3:30pm	8	<b>Geophysics</b> <ul style="list-style-type: none"> <li>• Surface, airborne, borehole</li> <li>• Methods and data processing and interpretation</li> <li>• Hydrologic properties derived from geophysics</li> </ul>	
4.30pm		<b>End Day 2</b>	

## Australian Groundwater School – Brisbane

### Wednesday 7 November 2018

TIME		THEME/TOPIC	PRESENTERS
9.00am	9	<b>Surface Water – Groundwater Interactions</b> <ul style="list-style-type: none"> <li>• Introduction to surface water hydrology</li> <li>• Locations and modes of interaction between surface water and groundwater</li> <li>• Water balance</li> <li>• Human impacts</li> <li>• Recharge/discharge definitions and estimation</li> </ul>	
10.00am	10	<b>Managed Aquifer Recharge</b> <ul style="list-style-type: none"> <li>• What is MAR and what is it for?</li> <li>• MAR structure types</li> <li>• Water sources to MAR</li> </ul>	
11.00am		<b>Morning Tea</b>	
11.15am	11	<b>Groundwater Chemistry</b> <ul style="list-style-type: none"> <li>• Why study groundwater chemistry?</li> <li>• Physical and chemical composition of groundwater</li> <li>• Origin of solutes, evolution in groundwater</li> <li>• Field parameters</li> </ul>	
12.15pm	12	<b>Environmental Isotopes in Groundwater</b> <ul style="list-style-type: none"> <li>• What are isotopes and their use?</li> <li>• Types of isotopes, Australian examples</li> </ul>	
1.15pm		<b>Lunch</b>	
2.00pm	13	<b>Groundwater Microbiology</b> <ul style="list-style-type: none"> <li>• Introduction to microbiology</li> <li>• Pathogens in groundwater</li> <li>• Microbial metabolism in groundwater</li> <li>• Bioremediation</li> </ul>	
3.00pm		<b>Afternoon Tea</b>	
3.15pm	14	<b>Groundwater Contamination</b> <ul style="list-style-type: none"> <li>• Introduction and definitions</li> <li>• Sources of contamination</li> <li>• Fate of contaminants in the sub surface</li> <li>• Groundwater remediation</li> </ul>	
4.15pm	15	<b>Salinity and Water Logging</b> <ul style="list-style-type: none"> <li>• What is salinity and why is it a groundwater issue</li> <li>• Primary and secondary salinity &amp; its sources</li> <li>• Dryland and Irrigation salinity, water logging</li> <li>• Impacts and management of salinity</li> </ul>	
5.00pm		<b>End Day 3</b>	

Australian Groundwater School – Brisbane  
 Thursday 8 November 2018

TIME		THEME/TOPIC	PRESENTERS
9.00am	16	<b>Coal Seam Gas and Groundwater</b> <ul style="list-style-type: none"> <li>• Definition of CSG and Unconventional Gas</li> <li>• Where CSG resources are located in Australia</li> <li>• How CSG is extracted</li> <li>• Operational aspects</li> <li>• Regulation surrounding operation</li> <li>• Issues, challenges and waste disposal</li> </ul>	
10.00am	17	<b>Mining Hydrogeology</b> <ul style="list-style-type: none"> <li>• Mine Dewatering</li> <li>• Dewatering Methods</li> <li>• Impacts of dewatering</li> <li>• Design of dewatering system</li> </ul>	
11.00am		<b>Morning Tea</b>	
11.15am	18	<b>Groundwater Dependent Ecosystems</b> <ul style="list-style-type: none"> <li>• Introduction and definition</li> <li>• Types of GDEs</li> <li>• Hydrogeological framework</li> <li>• Methods and indicators used in the determination of GDEs</li> <li>• Level of dependency</li> </ul>	
12.15pm	19	<b>Groundwater Management</b> <ul style="list-style-type: none"> <li>• What, why, when and how we manage GW?</li> <li>• Principles</li> <li>• Tools for groundwater management</li> <li>• Management issues</li> <li>• Climate change</li> </ul>	
1.15pm		<b>Lunch</b>	
2.00pm	2	<b>Groundwater Governance – Water Law</b> <ul style="list-style-type: none"> <li>• Development of water resources law in Australia</li> <li>• Essential aspects of the current legal framework</li> <li>• Groundwater and water trading</li> </ul>	
3.00pm		<b>Afternoon Tea</b>	
3.05pm	21	<b>Groundwater Governance – Water Law (continued)</b>	
3.45pm		<b>End of course wrap up and evaluation</b>	
4.00pm		<b>End Day 4</b>	